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## Grain and Forage
## Estimated Production Costs
## Ontario

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COORDINATION BRANCH

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Material in this report is based on information believed to be accurate at the time of publication; however, accuracy is not guaranteed. The crop production estimates result from a review of information from different sources and are based on many assumptions including estimates of land costs, levels of fertilizer use and cultural practices followed. Regional differences in crop production may result in variation in costs of production.

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No. 87-02

# GRAIN AND FORAGE CROPS

# ESTIMATED PRODUCTION COSTS

# ONTARIO, 1987

by

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# INTRODUCTION

Since 1948, the Economics and Policy Coordination Branch has carried out comprehensive studies of major field and horticultural crops grown in Ontario. These studies were designed to determine costs and returns of various farm enterprises, as well as the physical amounts of production inputs required.

Traditionally, data was collected by means of farmer interviews. Published reports of these studies in the form of county, regional and provincial averages found a wide distribution among extension and research personnel, educational institutions, farm organizations, lending institutions and policy makers. Cooperating farmers received reports showing their individual information in comparison with group averages.

With this extensive background in the development of cost studies, the Economics and Policy Coordination Branch has begun to use computers in the preparation of cost data. Methods of computer simulation have now replaced the time consuming process of data collection, tabulation and analysis.

With this new approach, special attention is paid to the physical quantities and prices of inputs for each crop studied. The technology used in the production of various crops is carefully examined so that the computer models accurately reflect the appropriate production technology for each commodity.

Information on physical inputs is obtained from a number of sources, including:

1. Previous studies done by this Branch;
2. Surveys of the farm supply trade;
3. Technical input/output coefficients; and
4. The consensus of producers, researchers, and extension and agribusiness personnel.

## THE DEVELOPMENT OF THE ACRES PROGRAM

A large number of computer programs that generate budgets and crop production cost estimates are now in existence. These computer programs vary in their degree of sophistication and in the amount of detail prepared. A large number of estimates covering a wide range of conditions can be generated quickly and efficiently. The effect of varying levels of technology, management practices and price levels can also be analyzed.

Cost of production estimates used in this report are based on the ACRES program. ACRES (Agricultural Crop Enterprises System) is a FORTRAN program originally written in Montana, adapted by Alberta Agriculture and recently modified and rewritten by the Economics and Policy Coordination Branch to meet Ontario conditions. All 1987 cost of production estimates in this report are based on this computer model.

## METHODS AND PROCEDURES

The information used in the preparation of each production cost estimate in this report was prepared through the use of recent Economics and Policy Coordination Branch studies, plus consultations with producers and extension, research and agribusiness personnel.

For each crop cost estimate in this report, the data was organized into variable and fixed costs and totalled to arrive at the cost of production both on a per acre and per hectare basis. Variable costs are those which vary directly with the production of each crop grown. They include seed, plants, hired labor, fertilizer, herbicides, insecticides, fungicides, other materials, machinery operating costs, marketing charges and interest on operating capital. Fixed cost inputs are operator labor, management allowance, interest on land, machinery and buildings, depreciation on machinery and buildings, taxes on real estate (net of farm tax rebate), and other overhead cost items.

In this report, cash costs of production are also determined. Cash costs include total variable costs, interest on the debt portion of investment in tractors and machines, taxes and other overhead costs.

## LABOR HOURS AND COSTS

The required number of labor hours was based on previous studies, as well as through discussions with those familiar with the production of each study crop. There are some crops which are harvested on a fixed rate per unit. For these crops, the labor hours and costs vary with the yields used in the cost estimate.

The operator labor hours were valued at $7.00 per hour. In addition, an allowance to management was made at the rate of 5 percent of the gross income.

The hired labor cost was calculated on a per hour basis and included benefits such as worker compensation, unemployment insurance, and the Canada Pension Plan. The rates varied according to area, crop and skill involved.

For some crops, piece work rates were used which were suggested by local farm labor pools. An allowance of 15 percent of basic earnings was added to cover benefits.

## MATERIALS

The amount of each material input was based on commonly used practices. Input prices are based on averages charged by the trade in the area where the particular crop is grown. For most crops, the quantities of seed, plants, fertilizer nutrients and other inputs are given on a per hectare basis. Because of the multitude of products available, pesticides are grouped as herbicides, insecticides, fungicides, nematicides, etc. The cost and quantity of non-returnable containers is reported where applicable.

## TRACTORS, MACHINES AND TRUCKS

Machinery complements used in the various crop production cost estimates were assumed to be five years old. Tractor and machine costs included depreciation, interest on investment, insurance, storage, repairs, maintenance, fuel and lubrication. If machines were used for other farming operations, costs were adjusted based on the proportion of use on the study crop. The declining balance method of depreciation was used, and a 15 percent rate to powered and a 10 percent rate to non-powered machines was applied.

Interest on machinery investment was calculated on the assumption that the equity portion was 70 percent and the debt portion was 30 percent of the total depreciated value. For this report, interest on equity was calculated at 4.6 percent, which was the average interest rate paid by chartered banks on savings accounts. The interest on the debt portion was based on the average prime rate of 9.0 percent, plus one for a total of 10.0 percent. Insurance and storage costs for machinery were based on 1.5 percent of their purchase price.

Repair and maintenance costs for individual machines were based on the fact sheet, "Cost of Owning and Operating Farm Machines", Agdex 825, Ontario Ministry of Agriculture and Food.

Fuel costs were based on the size of each tractor, truck or self-propelled machine used in the production operation. The following farmgate fuel prices were used: gasoline - 32.0 cents/litre; diesel - 33.0 cents/litre. The cost of oil, grease and filters was calculated at 15 percent of the fuel cost.

## CUSTOM FARMWORK SERVICES

There are crops produced in Ontario where it is an accepted practice to use custom farmwork services to perform certain operations. Usually, these services are employed when the farmer needs specialized machines, such as harvesters, sprayers, fertilizer applicators and trucks. Most of these machines cannot be economically owned and operated by one producer. Custom costs were itemized on a per hectare or per acre basis.

## LAND CHARGES

Determining the annual cost for land use is a controversial part in any study on production costs. During the past two decades, purchasers of farmland have been willing to pay more for it than can be justified from agricultural production. Purchasers believe the speculative aspect of land ownership in inflationary times offers benefits above those received from crop production. In deflationary times, however, this situation is reversed. For this reason, the appropriate interest rate used in calculating the interest cost on bare land for these crop production estimates is the real interest rate. The "real interest rate" is defined as the current lending rate of interest adjusted for inflation.

In this report, interest on land investment was calculated as follows:

1. The value of bare land was based on the average value for land in areas of Ontario where the production of each study crop predominates.

2. The interest rate applied was the prime rate discounted for the rate of inflation, which resulted in a 6.3 percent rate.

The farm real estate taxes used for each study crop reflect the area of production and are subject to Ontario's Farm Tax Reduction Program.

## BUILDING COSTS

For those crops where buildings are used in grading, packing, and/or storage, a building cost allowance was made.

The initial cost of these structures was based on the assumption that buildings were five years old.

| Depreciation | % |
|---|---|
| Steel and concrete structures | 2.5 |
| Wood structures | 5.0 |
| Greenhouses | 2.0 |

The interest on building investment was set at 6.3 percent, which was also used in calculating interest on land investment.

| Repairs and Maintenance | % |
|---|---|
| Steel structures | 1.0 |
| Concrete structures | 0.25 |
| Wood structures | 1.5 |

Insurance

0.5 percent of initial costs

The cost of machine housing was covered under tractor and machine costs.

Allowances are made for the use of picking baskets, storage bins, and other pieces of reusable equipment required in the production of certain crops.

## INTEREST ON OPERATING CAPITAL

Interest on operating capital required to finance each crop was calculated from the time an expenditure was made until the time income was generated from sales. Operating capital includes the cost of materials, fuel, repairs, hired labor and other cash items. In this study, the interest rate applied to operating capital was the average prime rate of 9.0 percent plus 1 percent for a rate of 10.0 percent.

## OTHER OVERHEAD

This allowance covers such items as the study crop's share of utilities, accounting and administration costs, use of the farm automobile, and general farm maintenance.

## OTHER COST CONSIDERATIONS

Depending on the crop studied, there are certain additional costs such as crop insurance, marketing board fees, grading charges and selling commissions.

## YIELDS AND RETURNS

For each study crop presented in this report, a footnote to the table defines how the average yield and average price were calculated.

Additional information on average yields and prices is shown in the Appendix of this report.

## GROSS MARGIN ANALYSIS

Gross margin is the amount above the variable costs that a crop contributes to the operator for his wages, management, and to the investment in machinery and land.

## CASH ANALYSIS

The cash analysis section estimates the returns over cash costs. Cash costs comprise of all variable costs, as well as interest on the debt portion of tractor and machine investment, real estate taxes and other overhead costs.

Table 1. - Barley: Estimated Cost of Production, Ontario, 1987

| | Cost, $ | |
|---|---|---|
| | per hectare | per acre |
| VARIABLE COSTS | | |
| Hired labor, 0.9 hours/ha | 5 | 2 |
| Seed, 111 kg/ha | 38 | 15 |
| Fertilizer, N - 44 kg/ha; $P_2O_5$ - 44 kg/ha; $K_2O$ - 44 kg/ha | 67 | 27 |
| Herbicide | 4 | 2 |
| Tractor and machine costs: | | |
| Repairs and maintenance | 47 | 19 |
| Fuel | 24 | 10 |
| Crop insurance | 13 | 5 |
| Interest on operating capital | 7 | 3 |
| TOTAL | 205 | 83 |
| FIXED COSTS | | |
| Operator labor, 3.46 hours/ha | 24 | 10 |
| Management allowance, 5% of gross income | 17 | 7 |
| Tractor and machine costs: | | |
| Depreciation | 50 | 20 |
| Interest on investment | 24 | 10 |
| Insurance and storage | 11 | 4 |
| Interest on land, $1,483/ha @ 6.3% per annum | 93 | 38 |
| Taxes | 15 | 6 |
| Other overhead | 37 | 15 |
| TOTAL | 271 | 110 |
| TOTAL ALL COSTS[a] | 476 | 193 |
| COST PER UNIT (Based on average yields of 3.12 tonne/ha and 58 bushels/acre)[b] | $152.56/tonne | $3.33/bu. |
| GROSS MARGIN ANALYSIS (Based on average prices of $105.61/tonne and $2.30/bushel)[c] | | |
| Gross income | 330 | 133 |
| Total variable costs | 205 | 83 |
| Gross margin | 125 | 50 |
| CASH ANALYSIS | | |
| Gross income | 330 | 133 |
| Cash costs[d] | 269 | 109 |
| Returns over cash costs | 61 | 24 |

[a]Storage costs not included, also costs and returns for straw handling not considered.

[b]Five-year average weighted yields for 1982-86.

[c]Three-year average weighted prices 1984-86.

[d]Cash costs include total variable costs, plus interest on debt portion of investment in tractors and machines of $12/ha ($5/acre) plus taxes and other overhead costs.

Table 2. - Barley: Operation Costs, Ontario, 1987

| Operation | Times over | Labor hours per ha | Labor hours per ac. | Labor, tractor and machine costs, $ per ha | Labor, tractor and machine costs, $ per ac. |
|---|---|---|---|---|---|
| Plowing ..... | 1 | .79 | .32 | 32.25 | 13.05 |
| Discing ..... | 1 | .30 | .12 | 14.43 | 5.84 |
| Spreading fertilizer ..... | 1 | .49 | .20 | 12.16 | 4.92 |
| Cultivating & harrowing... | 1 | .25 | .10 | 10.00 | 4.05 |
| Hauling seed ..... | 1 | .15 | .06 | 4.47 | 1.81 |
| Planting ..... | 1 | .59 | .24 | 21.37 | 8.65 |
| Spraying herbicide ..... | 1 | .30 | .12 | 7.93 | 3.21 |
| Combining ..... | 1 | .74 | .30 | 63.00 | 25.50 |
| Hauling & unloading at storage ..... | 1 | .74 | .30 | 19.35 | 7.83 |

Table 3. - Grain Corn: Estimated Cost of Production, Ontario, 1987

| | Cost, $ per hectare | Cost, $ per acre |
|---|---|---|
| **VARIABLE COSTS** | | |
| Hired labor, 1.24 hours/ha | 7 | 3 |
| Seed, 64,250 kg/ha | 61 | 25 |
| Fertilizer, N - 156 kg/ha; $P_2O_5$ - 55 kg/ha; $K_2O$ - 28 kg/ha | 92 | 37 |
| Herbicide | 53 | 21 |
| Insecticide | 30 | 12 |
| Tractor and machine costs: | | |
| Repairs and maintenance | 40 | 16 |
| Fuel | 37 | 15 |
| Custom drying charges | 76 | 31 |
| Custom storge, 1/2 crop for 5 months | 19 | 8 |
| Custom apply "N" | 20 | 8 |
| Crop insurance | 12 | 5 |
| Marketing fee | 2 | 1 |
| Interest on operating capital | 22 | 9 |
| TOTAL | 471 | 191 |
| **FIXED COSTS** | | |
| Operator labor, 3.61 hours/ha | 25 | 10 |
| Management allowance, 5% of gross income | 35 | 14 |
| Tractor and machine costs: | | |
| Depreciation | 57 | 23 |
| Interest on investment | 28 | 11 |
| Insurance and storage | 12 | 5 |
| Interest on land, $2,533/ha @ 6.3% per annum | 160 | 65 |
| Taxes | 15 | 6 |
| Other overhead | 37 | 15 |
| TOTAL | 369 | 149 |
| **TOTAL ALL COSTS** | 840 | 340 |
| **COST PER UNIT** (Based on average yields of 6.15 tonne/ha and 98 bushels/acre)[a] | $136.58/tonne | $3.47/bu. |
| **GROSS MARGIN ANALYSIS** (Based on average prices of $112.17/tonne and $2.85/bushel)[b] | | |
| Gross income | 690 | 279 |
| Total variable costs | 471 | 191 |
| Gross margin | 219 | 88 |
| **CASH ANALYSIS** | | |
| Gross income | 690 | 279 |
| Cash costs[c] | 536 | 217 |
| Returns over cash costs | 154 | 62 |

[a]Five-year average weighted yields for 1982-86.

[b]Projected price includes an estimate of the market price plus the Federal and Net Provincial Stabilization payments.

[c]Cash costs include total variable costs, plus interest on debt portion of investment in tractors and machines of $13/ha ($5/acre) plus taxes and otheroverhead costs.

Table 4. - Grain Corn: Operation Costs, Ontario, 1987

| Operation | Times over | Labor hours per ha | Labor hours per ac. | Labor, tractor and machine costs, $ per ha | Labor, tractor and machine costs, $ per ac. |
|---|---|---|---|---|---|
| Plowing, fall ..... | 1 | .79 | .32 | 32.25 | 13.05 |
| Discing ..... | 1 | .30 | .12 | 14.43 | 5.84 |
| Spreading fertilizer ..... | 1 | .25 | .10 | 5.83 | 2.36 |
| Spray herbicide ..... | 1 | .30 | .12 | 7.93 | 3.21 |
| Cultivate, harrow and pack ..... | 1 | .32 | .13 | 12.45 | 5.04 |
| Hauling seed ..... | 1 | .12 | .05 | 3.58 | 1.45 |
| Planting ..... | 1 | .59 | .24 | 27.00 | 10.93 |
| Row cultivating ..... | 1 | .32 | .13 | 8.03 | 3.25 |
| Custom apply "N" ..... | 1 | -- | -- | 19.52 | 7.90 |
| Spray herbicide ..... | 1 | .30 | .12 | 7.93 | 3.21 |
| Combining ..... | 1 | .79 | .32 | 67.21 | 27.20 |
| Hauling to storage ..... | 1 | .79 | .32 | 19.99 | 8.09 |
| Custom drying ..... | 1 | -- | -- | 75.74 | 30.65 |

Table 5. - Oats: Estimated Cost of Production, Ontario, 1987

| | Cost, $ | |
|---|---|---|
| | per hectare | per acre |
| VARIABLE COSTS | | |
| Hired labor, 0.9 hours/ha | 5 | 2 |
| Seed, certified, 62 kg/ha | 25 | 10 |
| Fertilizer, N - 44 kg/ha; $P_2O_5$ - 44 kg/ha; $K_2O$ - 44 kg/ha | 67 | 27 |
| Herbicide | 4 | 2 |
| Tractor and machine costs: | | |
| Repairs and maintenance | 47 | 19 |
| Fuel | 24 | 10 |
| Crop insurance | 11 | 4 |
| Interest on operating capital | 6 | 2 |
| TOTAL | 189 | 76 |
| FIXED COSTS | | |
| Operator labor, 3.46 hours/ha | 24 | 10 |
| Management allowance, 5% of gross income | 13 | 5 |
| Tractor and machine costs: | | |
| Depreciation | 50 | 20 |
| Interest on investment | 24 | 10 |
| Insurance and storage | 11 | 4 |
| Interest on land, $1,483/ha @ 6.3% per annum | 93 | 38 |
| Taxes | 15 | 6 |
| Other overhead | 37 | 15 |
| TOTAL | 267 | 108 |
| TOTAL ALL COSTS[a] | 456 | 184 |
| COST PER UNIT (Based on average yields of 2.25 tonne/ha and 59 bushels/acre)[b] | $202.67/tonne | $3.12/bu. |
| GROSS MARGIN ANALYSIS (Based on average prices of $114.09/tonne and $1.76/bushel)[c] | | |
| Gross income | 257 | 104 |
| Total variable costs | 189 | 76 |
| Gross margin | 68 | 28 |
| CASH ANALYSIS | | |
| Gross income | 257 | 104 |
| Cash costs[d] | 253 | 102 |
| Returns over cash costs | 4 | 2 |

[a]Storage costs not included, also costs and returns for straw handling not considered.

[b]Five-year average weighted yields for 1982-86.

[c]Three-year average weighted prices 1984-86.

[d]Cash costs include total variable costs, plus interest on debt portion of investment in tractors and machines of $12/ha ($5/acre) plus taxes and other overhead costs.

Table 6. - Oats: Operation Costs, Ontario, 1987

| Operation | Times over | Labor hours | | Labor, tractor and machine costs, $ | |
|---|---|---|---|---|---|
| | | per ha | per ac. | per ha | per ac. |
| Plowing ..... | 1 | .70 | .32 | 32.25 | 13.05 |
| Discing..... | 1 | .30 | .12 | 14.43 | 5.84 |
| Spreading fertilizer ..... | 1 | .49 | .20 | 12.16 | 4.92 |
| Cultivating and harrowing. | 1 | .25 | .10 | 10.00 | 4.05 |
| Hauling seed ..... | 1 | .15 | .06 | 4.47 | 1.81 |
| Planting ..... | 1 | .59 | .24 | 21.37 | 8.65 |
| Spraying herbicide ..... | 1 | .30 | .12 | 7.93 | 3.21 |
| Combining ..... | 1 | .74 | .30 | 63.00 | 25.50 |
| Hauling and unloading at storage ..... | 1 | .74 | .30 | 19.35 | 7.83 |

Table 7. - Soybeans: Estimated Cost of Production, Ontario, 1987

| | Cost, $ | |
|---|---|---|
| | per hectare | per acre |
| **VARIABLE COSTS** | | |
| Hired labor, 1.60 hours/ha | 10 | 4 |
| Seed, 67 kg/ha | 44 | 18 |
| Fertilizer, N - 15 kg/ha; $P_2O_5$ - 54 kg/ha; $K_2O$ - 27 kg/ha | 43 | 17 |
| Herbicide | 52 | 21 |
| Seed treatment | 10 | 4 |
| Tractor and machine costs: | | |
| Repairs and maintenance | 39 | 16 |
| Fuel | 35 | 14 |
| Custom storage, 1/2 crop for 5 months | 7 | 3 |
| Crop insurance | 14 | 6 |
| Marketing fees | 3 | 1 |
| Interest on operating capital | 11 | 4 |
| TOTAL | 268 | 108 |
| **FIXED COSTS** | | |
| Operator labor, 3.09 hours/ha | 22 | 9 |
| Management allowance, 5% of gross income | 29 | 12 |
| Tractor and machine costs: | | |
| Depreciation | 55 | 22 |
| Interest on investment | 27 | 11 |
| Insurance and storage | 12 | 5 |
| Interest on land, $2,533/ha @ 6.3% per annum | 160 | 65 |
| Taxes | 15 | 6 |
| Other overhead | 37 | 15 |
| TOTAL | 357 | 145 |
| **TOTAL ALL COSTS** | 625 | 253 |
| **COST PER UNIT** (Based on average yields of 2.29 tonne/ha and 34 bushels/acre)[a] | $272.93/tonne | $7.44/bu. |
| **GROSS MARGIN ANALYSIS** (Based on average prices of $251.26/tonne and $6.84/bushel)[b] | | |
| Gross income | 575 | 233 |
| Total variable costs | 268 | 108 |
| Gross margin | 307 | 125 |
| **CASH ANALYSIS** | | |
| Gross income | 575 | 233 |
| Cash costs[c] | 333 | 134 |
| Returns over cash costs | 242 | 99 |

[a]Five-year average weighted yields for 1982-86.

[b]Projected price includes an estimate of the market price plus the Federal and Net Provincial Stabilization payments.

[c]Cash costs include total variable costs, plus interest on debt portion of investment in tractors and machines of $13/ha ($5/acre) plus taxes and other overhead costs.

Table 8. - Soybeans: Operation Costs, Ontario, 1987

| Operation | Times over | Labor hours | | Labor, tractor and machine costs, $ | |
|---|---|---|---|---|---|
| | | per ha | per ac. | per ha | per ac. |
| Plowing, fall ..... | 1 | .72 | .29 | 28.79 | 11.65 |
| Discing ..... | 1 | .30 | .12 | 14.43 | 5.84 |
| Spreading fertilizer ..... | 1 | .25 | .10 | 5.90 | 2.39 |
| Spray herbicide ..... | 1 | .30 | .12 | 7.93 | 3.21 |
| Incorporate spray ..... | 1 | .32 | .13 | 13.20 | 5.34 |
| Hauling seed ..... | 1 | .12 | .05 | 3.41 | 1.38 |
| Planting ..... | 1 | .49 | .20 | 22.51 | 9.11 |
| Rotary hoeing ..... | 1 | .27 | .11 | 7.46 | 3.02 |
| Row cultivating ..... | 1 | .40 | .16 | 9.64 | 3.90 |
| Combining ..... | 1 | .77 | .31 | 66.00 | 26.71 |
| Hauling to storage ..... | 1 | .77 | .31 | 19.40 | 7.85 |

Table 9. - White Beans: Estimated Cost of Production, Ontario, 1987

| | Cost, $ per hectare | Cost, $ per acre |
|---|---|---|
| **VARIABLE COSTS** | | |
| Hired labor, 1.3 hours/ha | 6 | 2 |
| Seed, 49 kg/ha | 91 | 37 |
| Fertilizer, N - 28 kg/ha; $P_2O_5$ - 64 kg/ha; $K_2O$ - 32 kg/ha | 57 | 23 |
| Herbicide | 95 | 38 |
| Fungicide | 9 | 4 |
| Tractor and machine costs: | | |
| Repairs and maintenance | 45 | 18 |
| Fuel | 39 | 16 |
| Custom haul | 9 | 4 |
| Crop insurance | 37 | 15 |
| Marketing fees | 8 | 3 |
| Interest on operating capital | 24 | 10 |
| TOTAL | 420 | 170 |
| **FIXED COSTS** | | |
| Operator labor, 7.3 hours/ha | 53 | 21 |
| Management allowance, 5% of gross income | 32 | 13 |
| Tractor and machine costs: | | |
| Depreciation | 82 | 33 |
| Interest on investment | 40 | 16 |
| Insurance and storage | 18 | 7 |
| Interest on land, $2,532/ha @ 6.3% per annum | 160 | 65 |
| Taxes | 15 | 6 |
| Other overhead | 37 | 15 |
| TOTAL | 437 | 176 |
| **TOTAL ALL COSTS**[a] | 857 | 346 |
| **COST PER UNIT** (Based on average yields of 1.45 tonne/ha and 12.9 cwt/acre)[b] | $591.03/tonne | $26.82/cwt |
| **GROSS MARGIN ANALYSIS** (Based on average prices of $442.75/tonne and $20.14/cwt)[c] | | |
| Gross income | 642 | 260 |
| Total variable costs | 420 | 157 |
| Gross margin | 222 | 103 |
| **CASH ANALYSIS** | | |
| Gross income | 642 | 260 |
| Cash costs[d] | 491 | 199 |
| Returns over cash costs | 151 | 61 |

[a]Storage costs not included, also costs and returns for straw handling not considered.

[b]Five-year average weighted yields for 1982-86.

[c]Three-year average weighted prices 1984-86.

[d]Cash costs include total variable costs, plus interest on debt portion of investment in tractors and machines of $19/ha ($8/acre) plus taxes and other overhead costs.

Table 10. - White Beans: Operation Costs, Ontario, 1987

| Operation | Times over | Labor hours per ha | Labor hours per ac. | Labor, tractor and machine costs, $ per ha | Labor, tractor and machine costs, $ per ac. |
|---|---|---|---|---|---|
| Plowing | 1 | 1.23 | .50 | 39.61 | 16.03 |
| Field cultivate | 3 | 1.11 | .45 | 35.66 | 14.43 |
| Spray herbicide (preplant) | 1 | .49 | .20 | 10.11 | 4.09 |
| Incorporate spray | 1 | .37 | .15 | 10.50 | 4.25 |
| Haul seed and fertilizer | 1 | .22 | .09 | 4.89 | 1.98 |
| Planting | 1 | .74 | .30 | 29.13 | 11.79 |
| Pick stones | 1 | 1.11 | .45 | 15.96 | 6.46 |
| Row cultivate | 2 | 1.48 | .60 | 28.34 | 11.47 |
| Spray herbicide (preemerge) | 1 | .49 | .20 | 10.11 | 4.09 |
| Pull and windrow | 1 | .67 | .27 | 49.84 | 20.17 |
| Combining | 1 | .67 | .27 | 57.77 | 23.38 |
| Custom hauling to market | 1 | -- | -- | 9.24 | 3.74 |

-- not applicable

Table 11. - Winter Wheat: Estimated Cost of Production, Ontario, 1987

| | Cost, $ per hectare | Cost, $ per acre |
|---|---|---|
| **VARIABLE COSTS** | | |
| Hired labor, .15 hours/ha | 1 | x |
| Seed, 141 kg/ha | 56 | 23 |
| Fertilizer, N - 93 kg/ha; $P_2O_5$ - 55 kg/ha; $K_2O$ - 28 kg/ha | 83 | 34 |
| Herbicide | 4 | 2 |
| Tractor and machine costs: | | |
| Repairs and maintenance | 47 | 19 |
| Fuel | 28 | 11 |
| Custom apply "N" | 12 | 5 |
| Crop insurance | 12 | 5 |
| Marketing board fee | 4 | 1 |
| Interest on operating capital | 17 | 7 |
| TOTAL | 264 | 107 |
| **FIXED COSTS** | | |
| Operator labor, 4.57 hours/ha | 30 | 12 |
| Management allowance, 5% of gross income | 25 | 10 |
| Tractor and machine costs: | | |
| Depreciation | 55 | 22 |
| Interest on investment | 26 | 11 |
| Insurance and storage | 10 | 4 |
| Interest on land, $2,533/ha @ 6.3% per annum | 160 | 65 |
| Taxes | 15 | 6 |
| Other overhead | 37 | 15 |
| TOTAL | 358 | 145 |
| **TOTAL ALL COSTS**[a] | 622 | 252 |
| **COST PER UNIT** (Based on average yields of 3.70 tonne/ha and 55 bushels/acre)[b] | $168.11/tonne | $4.58/bu. |
| **GROSS MARGIN ANALYSIS** (Based on average prices of $133.65/tonne and $3.72/bushel)[c] | | |
| Gross income | 495 | 205 |
| Total variable costs | 264 | 107 |
| Gross margin | 231 | 98 |
| **CASH ANALYSIS** | | |
| Gross income | 495 | 205 |
| Cash costs[d] | 329 | 133 |
| Returns over cash costs | 166 | 72 |

x = less than 50 cents per acre.

[a] Storage costs not included, also costs and returns for straw handling not considered.

[b] Five-year average weighted yields for 1982-86.

[c] Projected price includes an estimate of the market price plus the Federal and Net Provincial Stabilization payments.

[d] Cash costs include total variable costs, plus interest on debt portion ofinvestment in tractors and machines of $13/ha ($5/acre) plus taxes and other overhead costs.

Table 12. - Winter Wheat: Operation Costs, Ontario, 1987

| Operation | Times over | Labor hours per ha | Labor hours per ac. | Labor, tractor and machine costs, $ per ha | Labor, tractor and machine costs, $ per ac. |
|---|---|---|---|---|---|
| Plowing | 1 | .79 | .32 | 32.25 | 13.05 |
| Discing | 2 | .59 | .24 | 28.84 | 11.67 |
| Spreading fertilizer | 1 | .25 | .10 | 6.10 | 2.47 |
| Cultivating, harrowing and packing | 1 | .30 | .12 | 12.85 | 5.20 |
| Hauling seed | 1 | .15 | .06 | 4.47 | 1.81 |
| Planting in fall | 1 | .62 | .25 | 22.24 | 9.00 |
| Applying "N" in spring (Custom) | 1 | -- | -- | 12.35 | 5.00 |
| Spraying herbicide | 1 | .30 | .12 | 7.93 | 3.21 |
| Combining | 1 | .74 | .30 | 63.00 | 25.50 |
| Hauling to elevator | 1 | .74 | .30 | 19.47 | 7.88 |

Table 13. - Alfalfa Hay: Estimated Cost of Production, Ontario, 1987

| | Cost, $ per hectare | Cost, $ per acre |
|---|---|---|
| **VARIABLE COSTS** | | |
| Establishment costs: | | |
| Alfalfa seed, 11.1 kg/ha | 74 | 30 |
| Timothy seed, 2.5 kg/ha | 5 | 2 |
| Fertilizer; $P_2O_5$ - 33 kg/ha; $K_2O$ - 100 kg/ha (applied) | 57 | 23 |
| Herbicide | 18 | 7 |
| Crop insurance | 7 | 3 |
| Total establishment costs | 161 | 65 |
| Annual cost (establishment costs spread over 3 years of production) | 53 | 21 |
| Hired labor, 6.0 hours/ha | 30 | 12 |
| Fertilizer, $P_2O_5$ - 37 kg/ha; $K_2O$ - 111 kg/ha (fall applied) | 52 | 21 |
| Twine | 22 | 9 |
| Tractor and machine costs: | | |
| Repairs and maintenance | 26 | 11 |
| Fuel | 22 | 9 |
| Crop insurance | 17 | 7 |
| Interest on operating capital | 13 | 5 |
| TOTAL | 235 | 95 |
| **FIXED COSTS** | | |
| Operator labor, 5.26 hours/ha | 37 | 15 |
| Management allowance, 5% of gross income | 32 | 13 |
| Tractor and machine costs: | | |
| Depreciation | 101 | 41 |
| Interest on investment | 62 | 25 |
| Insurance and storage | 20 | 8 |
| Interest on land, $2,100/ha @ 6.3% per annum | 132 | 54 |
| Taxes | 13 | 5 |
| Other overhead | 25 | 10 |
| TOTAL | 422 | 171 |
| **TOTAL ALL COSTS**[a] | 657 | 266 |
| **COST PER UNIT** (Based on average yields of 9.0 tonne/ha and 4.0 ton/acre) | $73.00/tonne | $66.50/ton |
| **GROSS MARGIN ANALYSIS** (Based on average prices of $70.58/tonne and $64.00/ton)[b] | | |
| Gross income | 635 | 256 |
| Total variable costs | 235 | 95 |
| Gross margin | 400 | 161 |
| **CASH ANALYSIS** | | |
| Gross income | 635 | 256 |
| Cash costs[c] | 301 | 122 |
| Returns over cash costs | 334 | 134 |

[a]Storage costs not included.

[b]Average hay price, 1981-85, from Ontario Agricultural Statistics, $54.06/tonne or $49.02/ton. Premium for 3% additional crude protein @ 55 cents/kg; $70.60/t; $64.02/ton.

[c]Cash costs include variable costs, plus interest on debt portion of investment in tractors and machines of $27/ha ($11/acre) plus taxes and other overhead costs.

Table 14. - Alfalfa Hay: Operation Costs, Ontario, 1987

| Operation | Times over | Labor hours per ha | Labor hours per ac. | Labor, tractor and machine costs, $ per ha | Labor, tractor and machine costs, $ per ac. |
|---|---|---|---|---|---|
| Fertilizing ..... | 1 | .20 | .08 | 4.87 | 1.97 |
| Cutting ..... | 2 | 1.63 | .66 | 101.31 | 41.00 |
| Raking ..... | 2 | 1.38 | .56 | 41.32 | 16.72 |
| Baling (1st cut)[a] ..... | 1 | 2.30 | .93 | 54.09 | 21.89 |
| Baling (2nd cut)[b] ..... | 1 | 1.73 | .70 | 40.53 | 16.40 |
| Hauling and unloading (1st cut) ..... | 1 | 2.30 | .93 | 32.79 | 13.27 |
| Hauling and unloading (2nd cut) ..... | 1 | 1.73 | .70 | 24.56 | 9.94 |

[a]Yield 1st cut 5.2 t/ha; 2.3 ton/acre

[b]Yield 2nd cut 3.8 t/ha; 1.7 ton/acre

Table 15. - Corn Silage: Estimated Cost of Production, Ontario, 1987

| | Cost, $ per hectare | Cost, $ per acre |
|---|---|---|
| **VARIABLE COSTS** | | |
| Hired labor, .1 hours/ha | 1 | 1 |
| Seed, 59,000 kg/ha | 56 | 23 |
| Fertilizer, N - 127 kg/ha; $P_2O_5$ - 55 kg/ha; $K_2O$ - 28 kg/ha | 85 | 34 |
| Herbicide | 53 | 21 |
| Insecticide | 27 | 11 |
| Tractor and machine costs: | | |
| Repairs and maintenance | 22 | 9 |
| Fuel | 26 | 11 |
| Custom apply "N" | 20 | 8 |
| Custom harvesting and silo filling | 106 | 43 |
| Silo repair and maintenance | 2 | 1 |
| Interest on operating capital | 20 | 8 |
| TOTAL | 418 | 168 |
| **FIXED COSTS** | | |
| Operator labor, 3.36 hours/ha | 24 | 10 |
| Management allowance, 5% of gross income | 31 | 12 |
| Tractor and machine costs: | | |
| Depreciation | 32 | 13 |
| Interest on investment | 15 | 6 |
| Insurance and storage | 7 | 3 |
| Interest on land, $2,100/ha @ 6.3% per annum | 132 | 54 |
| Taxes | 15 | 6 |
| Silo; interest, depreciation & insurance | 70 | 29 |
| Other overhead costs | 37 | 15 |
| TOTAL | 363 | 148 |
| **TOTAL ALL COSTS** | 781 | 316 |
| **COST PER UNIT** (Based on average yields of 27.80 tonne/ha and 12.4 ton/acre)[a] | $28.09/tonne | $25.48/ton |
| **GROSS MARGIN ANALYSIS** (Based on average prices of $22.04/tonne and $19.95/ton)[b] | | |
| Gross income | 613 | 247 |
| Total variable costs | 418 | 168 |
| Gross margin | 195 | 79 |
| **CASH ANALYSIS** | | |
| Gross income | 613 | 247 |
| Cash costs[c] | 477 | 192 |
| Returns over cash costs | 136 | 55 |

[a]Yield is the five-year weighted average for 1982-86.

[b]Silage price per ton of $22.04/tonne ($19.95/ton) equals the grain corn price per bushel for same period times seven.

[c]Cash costs include total variable costs, plus interest on debt portion of investment in tractors and machines of $7/ha ($3/acre) plus taxes and other overhead costs.

Table 16. - Corn Silage: Operation Costs, Ontario, 1987

| Operation | Times over | Labor hours per ha | Labor hours per ac. | Labor, tractor and machine costs, $ per ha | Labor, tractor and machine costs, $ per ac. |
|---|---|---|---|---|---|
| Plowing | 1 | .79 | .32 | 32.25 | 13.05 |
| Discing | 1 | .30 | .12 | 14.43 | 5.84 |
| Spreading fertilizer | 1 | .49 | .20 | 12.16 | 4.92 |
| Cultivating, harrowing and packing | 1 | .30 | .12 | 12.85 | 5.20 |
| Hauling seed | 1 | .15 | .06 | 4.47 | 1.81 |
| Planting | 1 | .59 | .24 | 27.00 | 10.93 |
| Spraying herbicide | 1 | .30 | .12 | 7.54 | 3.05 |
| Row cultivating | 1 | .30 | .12 | 7.93 | 3.21 |
| Custom applying "N" | 1 | -- | -- | 19.52 | 7.90 |
| Custom harvesting and silo filling | 1 | -- | -- | 105.02 | 42.50 |

-- not applicable

Appendix Table 1 - Average Farm Yields, Grain and Forage Crops, Ontario, 1981-1986, Imperial Units.

| Crop | 1981 | 1982 | 1983 | 1984 | 1985 | 1986* | 5-year 1982-86 Weighted Average |
|---|---|---|---|---|---|---|---|
| | | | | - per acre - | | | |
| Winter Wheat...bu | 52 | 43 | 50 | 57 | 67 | 54 | 55 |
| Spring Wheat...bu | 40 | 40 | 36 | 43 | 51 | 41 | 42 |
| Rye.....bu | 37 | 35 | 34 | 37 | 40 | 35 | 36 |
| Oats.....bu | 54 | 61 | 46 | 60 | 67 | 61 | 59 |
| Barley.....bu | 57 | 59 | 46 | 59 | 67 | 60 | 58 |
| Mixed Grains...bu | 62 | 64 | 49 | 65 | 70 | 63 | 62 |
| Grain Corn.....bu | 95 | 98 | 92 | 96 | 102 | 102 | 98 |
| Soybeans.....bu | 32 | 35 | 29 | 34 | 37 | 36 | 34 |
| Flaxseed.....bu | 25 | 22 | 13 | 25 | 25 | 23 | 21 |
| Buckwheat.....bu | 20 | 22 | 19 | 23 | 23 | 16 | 20 |
| Canola.....bu | n/a | n/a | 19 | 33 | 36 | 35 | n/a |
| White Beans...cwt | 13.0 | 13.6 | 12.5 | 13.3 | 14.3 | 11.0 | 12.9 |
| Fodder (silage) corn.....tons | 13.0 | 12.5 | 11.4 | 12.9 | 12.6 | 12.8 | 12.4 |
| Hay.....tons | 3.0 | 3.0 | 2.9 | 3.1 | 3.0 | 3.4 | 3.1 |

Appendix Table 2 - Farm Prices, Grain and Forage Crops, Ontario, 1980-1985 Imperial Units.

| Crop | 1980 | 1981 | 1982 | 1983 | 1984 | 1985* | 5-year 1981-85 Average |
|---|---|---|---|---|---|---|---|
| | | | | - dollars - | | | |
| Winter Wheat...bu | 4.47 | 4.27 | 4.48 | 3.99 | 4.20 | 3.89 | 4.17 |
| Spring Wheat...bu | 4.25 | 3.90 | 3.45 | 3.90 | 4.10 | 3.75 | 3.82 |
| Rye.....bu | 4.10 | 3.50 | 2.25 | 2.50 | 2.60 | 2.50 | 2.67 |
| Oats.....bu | 2.14 | 2.06 | 1.80 | 2.21 | 2.15 | 1.76 | 2.00 |
| Barley.....bu | 2.90 | 2.65 | 2.34 | 3.05 | 2.97 | 2.32 | 2.67 |
| Mixed Grains...bu | 2.45 | 2.27 | 1.99 | 2.62 | 2.57 | 1.83 | 2.26 |
| Grain Corn.....bu | 3.84 | 2.92 | 2.84 | 4.03 | 3.41 | 2.87 | 3.21 |
| Soybeans.....bu | 8.53 | 7.19 | 6.80 | 9.33 | 7.55 | 6.71 | 7.51 |
| Flaxseed.....bu | 8.90 | 8.50 | 6.85 | 8.00 | 7.45 | 6.40 | 7.44 |
| Buckwheat.....bu | 3.45 | 3.30 | 2.90 | 3.00 | 4.00 | 4.00 | 3.44 |
| Canola.....bu | n/a | n/a | n/a | 8.85 | 7.80 | 5.90 | n/a |
| White Beans...cwt | 28.50 | 30.70 | 24.44 | 28.41 | 23.60 | 17.61 | 24.95 |
| Fodder (silage) corn.....ton | 18.50 | 18.10 | 17.40 | 21.40 | 21.70 | 22.20 | 20.16 |
| Hay.....ton | 44.80 | 45.70 | 47.10 | 50.40 | 50.10 | 51.80 | 49.02 |

n/a Not available
*Prices and/or yields are subject to revision. 1986 prices not available.
Source: Agricultural Statistics for Ontario, Ontario Ministry of Agriculture and Food, Toronto

Appendix Table 3 - Average Farm Yields, Grain and Forage Crops, Ontario 1981-1986, Metric Units.

| Crop | 1981 | 1982 | 1983 | 1984 | 1985 | 1986* | 5-year 1982-86 Weighted Average |
|---|---|---|---|---|---|---|---|
| | | | - kilograms/hectare - | | | | |
| Winter Wheat... | 3,500 | 2,900 | 3,400 | 3,900 | 4,500 | 3,660 | 3,775 |
| Spring Wheat... | 2,700 | 2,700 | 2,400 | 2,900 | 3,440 | 2,790 | 2,830 |
| Rye..... | 2,300 | 2,200 | 2,100 | 2,300 | 2,510 | 2,170 | 2,265 |
| Oats..... | 2,000 | 2,300 | 1,700 | 2,300 | 2,570 | 2,340 | 2,255 |
| Barley..... | 3,100 | 3,200 | 2,500 | 3,200 | 3,590 | 3,240 | 3,125 |
| Mixed Grains... | 2,800 | 2,900 | 2,200 | 2,900 | 3,150 | 2,830 | 2,785 |
| Grain Corn..... | 6,000 | 6,200 | 5,800 | 6,100 | 6,430 | 6,410 | 6,165 |
| Soybeans..... | 2,200 | 2,300 | 2,000 | 2,200 | 2,470 | 2,440 | 2,290 |
| Flaxseed..... | 1,600 | 1,400 | 820 | 1,600 | 1,590 | 1,440 | 1,320 |
| Buckwheat..... | 1,100 | 1,200 | 1,000 | 1,300 | 1,250 | 840 | 1,080 |
| Canola..... | n/a | n/a | 1,060 | 1,850 | 2,020 | 1,940 | n/a |
| White Beans.... | 1,450 | 1,530 | 1,400 | 1,480 | 1,610 | 1,230 | 1,450 |
| | | | - tonnes/hectare - | | | | |
| Fodder (silage) corn..... | 30 | 28 | 26 | 29 | 28 | 29 | 28 |
| Hay..... | 6.8 | 6.7 | 6.5 | 6.8 | 6.8 | 7.6 | 6.9 |

Appendix Table 4 - Farm Prices, Grain and Forage Crops, Ontario, 1980-1985 (Metric Units)

| Crop | 1980 | 1981 | 1982 | 1983 | 1984 | 1985* | 5-year 1981-85 Average |
|---|---|---|---|---|---|---|---|
| | | | - dollars/tonne - | | | | |
| Winter Wheat... | 164.30 | 157.00 | 165.00 | 146.00 | 154.00 | 143.00 | 152.70 |
| Spring Wheat... | 156.00 | 143.00 | 127.00 | 143.00 | 151.00 | 138.00 | 140.40 |
| Rye..... | 161.00 | 140.00 | 89.00 | 98.00 | 102.00 | 98.00 | 105.40 |
| Oats..... | 139.00 | 134.00 | 117.00 | 143.00 | 139.00 | 114.00 | 129.40 |
| Barley..... | 141.48 | 122.00 | 107.00 | 140.00 | 136.00 | 107.00 | 122.30 |
| Mixed Grains... | 135.00 | 125.00 | 110.00 | 144.00 | 142.00 | 101.00 | 124.40 |
| Grain Corn..... | 151.36 | 115.00 | 112.00 | 159.00 | 134.00 | 113.00 | 126.90 |
| Soybeans..... | 313.49 | 264.00 | 250.00 | 343.00 | 278.00 | 246.00 | 276.20 |
| Flaxseed..... | 350.00 | 333.00 | 270.00 | 315.00 | 293.00 | 252.00 | 293.40 |
| Buckwheat..... | n/a | 152.00 | 133.00 | 138.00 | 184.00 | 184.00 | 158.20 |
| Canola..... | n/a | n/a | n/a | n/a | 344.00 | 260.00 | n/a |
| White Beans.... | 628.32 | 677.00 | 539.00 | 626.00 | 521.00 | 388.00 | 556.20 |
| Fodder (silage) corn..... | 20.40 | 20.00 | 19.20 | 23.60 | 23.90 | 24.40 | 22.25 |
| Hay..... | 49.40 | 50.30 | 51.90 | 55.60 | 55.20 | 57.10 | 53.60 |

n/a Not available
*Prices and/or yields are subject to revision. 1986 prices not available
Source: Agricultural Statistics for Ontario, Ontario Ministry of Agriculture and Food, Toronto